

**ARIZONA GAME AND FISH DEPARTMENT  
HABITAT PARTNERSHIP PROGRAM  
HABITAT ENHANCEMENT AND WILDLIFE MANAGEMENT PROPOSAL**

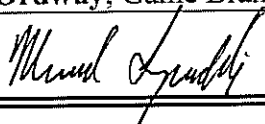
**PROJECT INFORMATION**

<b>Project Title:</b> Mule Deer Movements: Implications for Corridor Design in the Planned Sun Valley Development, Buckeye, AZ		<b>Project No.</b> 07-402
<b>Region/GMU:</b> Regions IV and VI; GMU 42	<b>HPC:</b>	
<b>Project Type:</b> Wildlife Linkages: Mule Deer Corridor Identification		
<b>Project Description:</b> The objectives of this proposed study are: <ol style="list-style-type: none"> <li>1) Identify key mule deer (<i>Odocoileus hemionus</i>) movement corridors between the White Tank Mountain Regional Park and the planned Sun Valley Development (Project Area); and</li> <li>2) Provide developers with recommendations for incorporating these corridors areas into development plans in order to perpetuate the mule deer herd.</li> </ol>		
<b>Wildlife Species to Benefit:</b> Project will directly benefit mule deer with possible benefits to other wildlife species that will potentially utilize wildlife corridors through developed areas.		
<b>Possible Funding Partners:</b> Landowners West of the White Tank Mountains (funding secured)		
<b>Implementation Schedule:</b> <b>Beginning:</b> February 2007 <b>Completed:</b> Fall / Winter 2008		

**PROJECT FUNDING**

**SBG Funds Requested:** \$ 41,110  
**Cost Share Funds:** \$ 83,809  
**Total Project Costs:** \$ 124,919

**PARTICIPANT INFORMATION**

<b>Applicant:</b> Michael F. Ingraldi, Research Supervisor, Arizona Game and Fish Department, Research Branch <b>Telephone:</b> 928-532-5625	<b>Address:</b> 2221 W. Greenway Road, Phoenix, AZ 85023-4399
<b>AGFD Contact and Phone No.</b> (If applicant is not AGFD personnel)	
<b>Coordinated with:</b> Chantal O'Brien, Research Branch Chief, Arizona Game and Fish Department (AGFD), Research Branch; Ray Schweinsburg, Research Program Supervisor, AGFD, Research Branch; Mark Stewart, Wildlife Manager II, AGFD, Region VI; Shawn Lowery, Wildlife Specialist II, AGFD, Research Branch; David Grandmaison, Wildlife Specialist I, AGFD, Research Branch; Russ Haughey, Habitat Program Manager, AGFD, Region VI; Rebecca Davidson, Project Evaluation Program Supervisor, AGFD, Habitat Branch; Leonard Ordway, Game Branch Chief, AGFD, Game Branch.	
<b>Applicant's signature:</b> 	<b>Date:</b> 2/27/07

### **NEED STATEMENT/PROBLEM ANALYSIS:**

Arizona is now the fastest growing state in the USA, a trend that will undoubtedly continue. Roads and developments resulting from that growth present one of the greatest threats to Arizona's wildlife through direct mortality, destroyed habitat and habitat fragmentation. The Department's Strategic Plan "Wildlife 2012" continually recognizes that human growth is one of the greatest threats to wildlife and its habitats in Arizona. One of its "Resource Management Objectives" is to "Maintain or improve the quality and connectivity of habitats ... ."

The planned Sun Valley Development encompasses approximately 183 square miles between the White Tank Mountains and the Hassayampa River along the newly constructed Sun Valley Parkway (Figure 1). This development has the potential to sever mule deer movement corridors, effectively isolating the White Tank Mountain mule deer population and increasing the probability of localized extinction. The cumulative impact of habitat loss and fragmentation will inevitably degrade historically high quality mule deer habitat (Figure 2.) within the White Tank Mountain area. However, incorporating connectivity into the early stages of master planned developments creates an opportunity to maintain landscape connectivity while allowing for smart-growth in an increasingly urbanizing landscape. In this context, the Arizona Game and Fish Department and the Landowners West of the White Tank Mountains agree that this development has a unique opportunity to design high quality residential opportunities (i.e., greenspace, viewsapes, watchable wildlife, hiking trails, etc.) that preserve open space and movement corridors essential for the long-term persistence of the local mule deer population. Thus, maintaining landscape connectivity between the White Tank Mountain Regional Park and the Hassayampa River may help alleviate the deleterious effects of habitat loss and fragmentation resulting from continuing development in the greater Phoenix Area.

The information gained from the proposed study will be important in planning corridors that allow for mule deer movements around the White Tank Mountain Regional Park to ensure long-term population viability. Information gained from this study may also be useful elsewhere where development is encroaching on mule deer habitat, a trend predicted to accelerate during the next several decades.

### **PROJECT OBJECTIVES:**

- 1) Identify key mule deer (*Odocoileus hemionus*) movement corridors between the White Tank Mountain Regional Park and the planned Sun Valley Development (Project Area); and
- 2) Provide developers, Arizona Department of Transportation, Federal Highway Administration, and Maricopa County Department of Transportation with recommendations for incorporating these corridors into development plans to mitigate impacts to the White Tank Mountains mule deer herd.

### **PROJECT STRATEGIES:**

During February 2007, 12 male mule deer were fitted with spread spectrum GPS telemetry collars (Figure 3 and 4). The Sun Valley Landowners funded this component of the study (\$83,809). Location information for each deer will be gathered on a bi-weekly or monthly basis. Research biologists from Arizona Game and Fish Department will fly over the project area to collect GPS data stored in the telemetry collars. These data will be plotted on Sun Valley Development planning maps to identify potential movement corridors. This information will be compiled into reports and maps and shared with community developers.

### **PROJECT LOCATION:**

White Tank Mountain Regional Park west to the Hassayampa River, including private holdings comprising the Sun Valley Master Planned Development in Buckeye, AZ. Legal Description: 04N04W sections 25-36, 03N04W sections 1-36, 02N04W sections 1-6. Study area size is approximately 34,560 acres. Map is attached (Figure 1).

**LAND OWNERSHIP AT PROJECT SITE (Please state specifically if PRIVATE PROPERTY and provide landowner's name):**

Parks and Recreation managed lands in the White Tank Mountain Regional Park, State Trust Land, Bureau of Land Management, Bureau of Reclamation, and private land comprising the Sun Valley Master Planned Development in Buckeye, AZ owned by a consortium of developers called the Landowners West of the White Tank Mountains.

**IF PRIVATE PROPERTY, IS THERE A STEWARDSHIP AGREEMENT BETWEEN THE LANDOWNER AND THE DEPARTMENT?**

A cooperative agreement exists between the Arizona Game and Fish Department and the Landowners West of the White Tank Mountains to conduct this study. The Landowners have paid for the first component (collaring males) of the study.

**HABITAT DESCRIPTION:**

The White Tank Mountains and area to the west contains two of the six Sonoran desert subdivisions: the Arizona Upland and the Lower Colorado River Valley. These subdivisions are dominated by the Sonoran desert scrub Creosote bush-bursage and paloverde-bursage biome series habitat types. Vegetation composition is variable with ironwood (*Olnea tesota*), mesquite (*Prosopis* spp.) and foothill paloverde (*Parkinsonia microphyllum*) associations common along washes and more open scrub-type growth with smaller trees on slopes and upland areas. A variety of cacti and shrubs including saguaro (*Carnegiea gigantea*) creosote bush (*Larrea tridentata*) ocotillo (*Foquieria splendens*), hackberry (*Celtis pallida*), acacia (*Acacia constricta*), triangle-leaf bursage (*Ambrosia deltoidea*) are common shrub layer and ground cover species. The project area from west to east (Hassamapa River on the west and the White Tank Mountains on the eastern boundary) consists of flat alluvial slopes extending into more rugged terrain with deeply incised washes and eventually more steep, sloped mountainous terrain (Figure 1). Elevation ranges from 380 to 3060 ft (115 – 933 m). Monthly precipitation amounts range from 0.1 (2 mm) to 1.1 in (27 mm), with March being the wettest month and annual precipitation at 8.3 in (210 mm).

**ITEMIZED USE OF FUNDS:**

Category	Cost
Personnel (Salary + ERE @ 25%) Wildlife Intern (\$1950/mo. x 3 mos.)	5850
<b>Sub-total</b>	<b>5,850</b>
Mileage AGFD vehicles (\$.60/mile x 6,000 miles)	<b>3,600</b>
Per diem Wildlife Intern (\$34/day x 40 days)	1360
<b>Sub-total</b>	<b>1,360</b>
Other Operating Expenses Office space (\$1500/mo.) Flight Time (26 flights @ \$300/2 hour flight) Computer support (laptop & mapping software/printer) Digital camera and memory card GPS unit with rove capabilities Misc. office and field equipment (e.g., flagging, photocopies, cell phone use, bait, batteries, report binding, etc.)	9000 7800 3400 2000 5100 3000
<b>Sub-total</b>	<b>30,300</b>
<b>TOTAL</b>	<b>\$41,110</b>

**LIST COOPERATORS AND DESCRIBE POTENTIAL PARTICIPATION:**

Sun Valley Developers – have contributed \$83,809 toward this project  
AGFD Region VI – will provide logistic support during mule deer captures.

**PROJECT MONITORING PLAN:**

Additional funding will be sought to monitor mule deer use of corridors developed as a result of the study.

**PROJECT MAINTENANCE:**

N/A

**PROJECT COMPLETION REPORT TO BE FILED BY:**

Michael Ingraldi, Research Supervisor, Arizona Game and Fish Department, Research Branch

**WATER DEVELOPMENT PROJECTS (see attached worksheet):**

N/A

**TREE SHEARING (AGRA-AXE, PUSH) PROJECTS (see attached worksheet):**

N/A

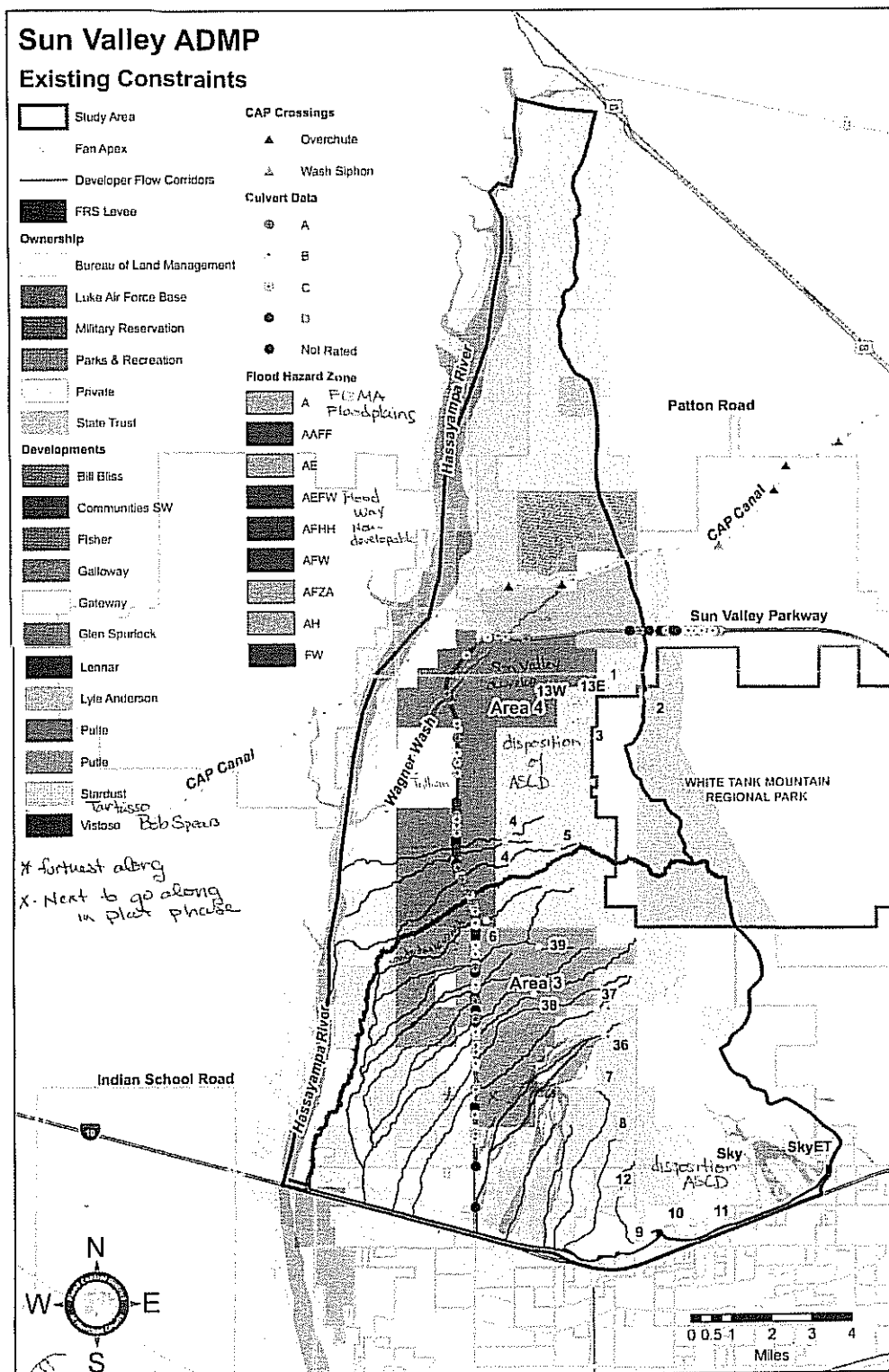


Figure 1. Project area depicting the White Tank Mountain mule deer area and proposed developments to the west that may restrict mule deer movements.

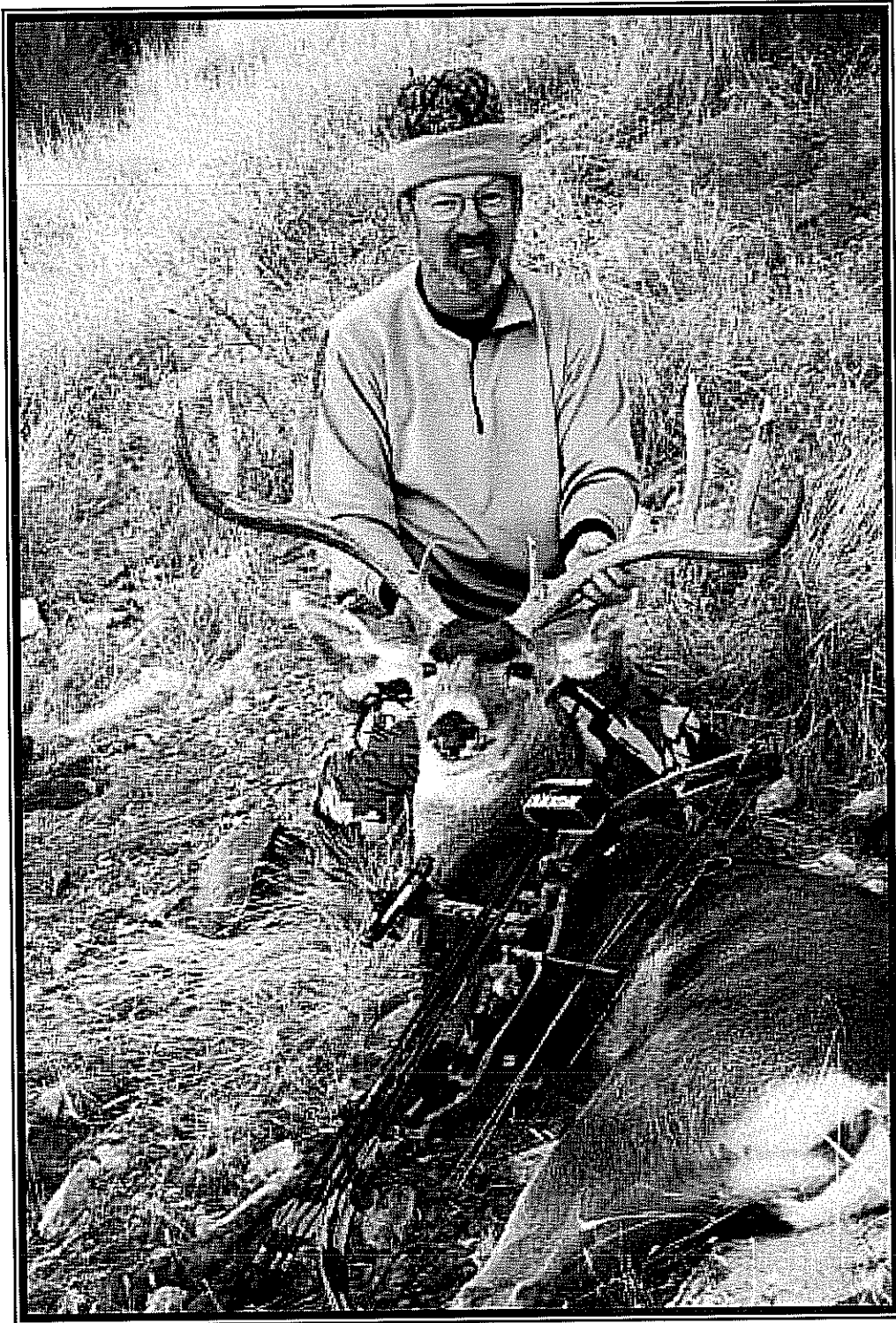


Figure 2. Hunter with a good White Tank Mountain buck.

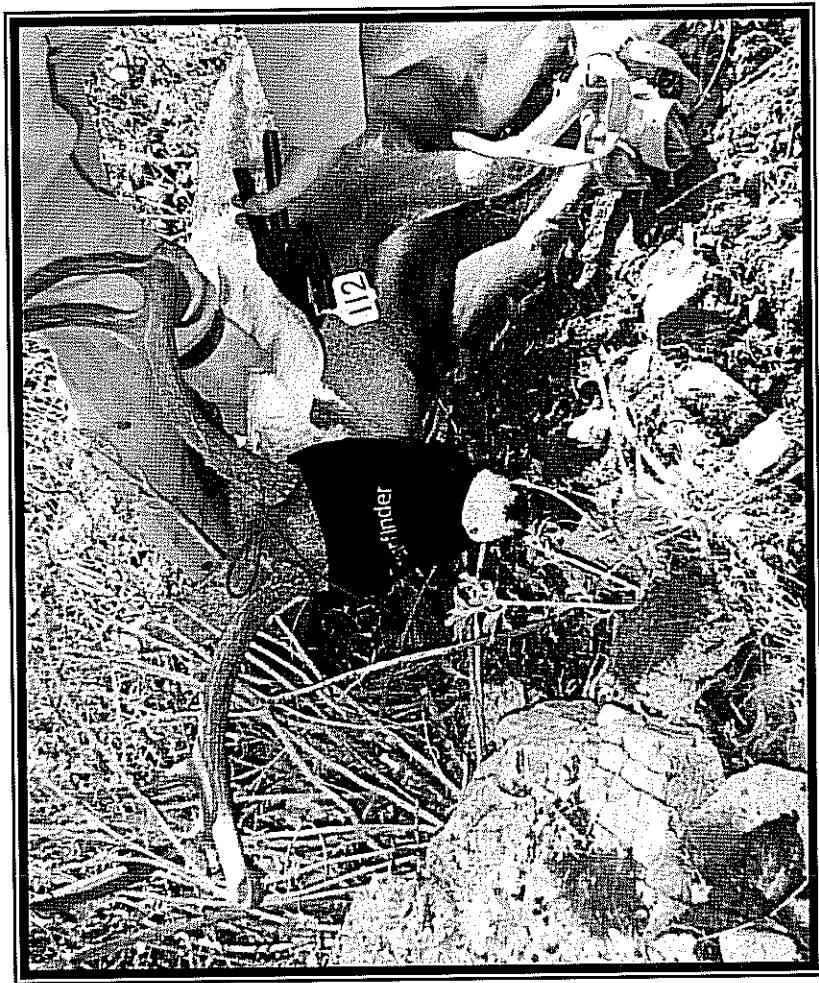
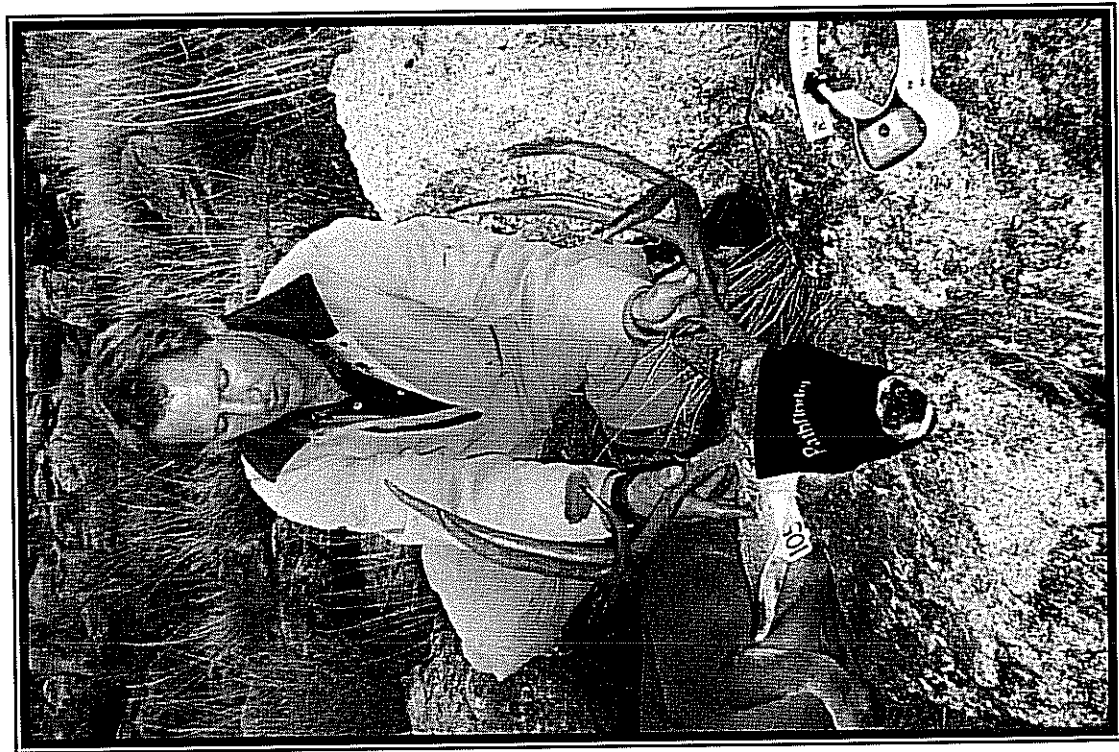


Figure 3. Mule deer bucks captured February 2007 in the White Tank Mountains.



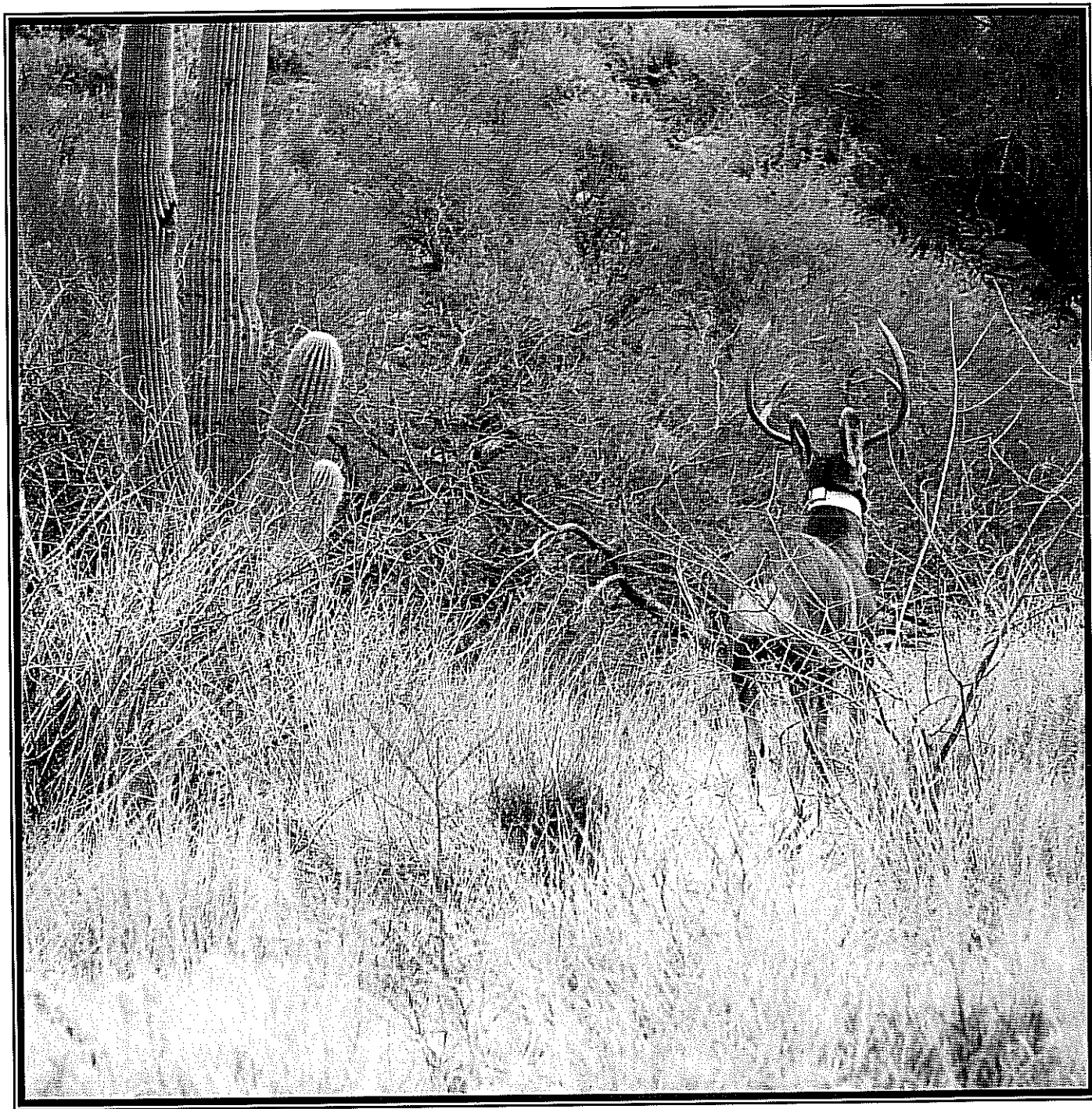


Figure 4. Mule deer buck released with GPS telemetry collar in the White Tank Mountains.